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COMMENT ON NEIDER: THE ISSUE OF INTERPRETATION OF EXPERIMENTS. (U)
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| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
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| 1. REPORT NUMBER GS-9 | 2. GOVT ACCESSION NO. DD-A095 547 | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) Comment on Neider: The Issue of Interpretation of Experiments | 5. TYPE OF REPORT & PERIOD COVERED Technical Report | |
| 7. AUTHOR(s) Edwin A. Locke | 6. PERFORMING ORG. REPORT NUMBER N00014-79-C-0680 | |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS College of Business and Management University of Maryland College Park, MD 20742 | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR-170-890 | |
| 11. CONTROLLING OFFICE NAME AND ADDRESS | 12. REPORT DATE February 1981 | |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Organizational Effectiveness Research Programs Office of Naval Research (Code 452) Arlington, VA 22217 | 13. NUMBER OF PAGES 12 | |
| 16. DISTRIBUTION STATEMENT (of this Report) APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED | 15. SECURITY CLASS. (of this report) Unclassified | |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE FEB 26 1981 | |
| 18. SUPPLEMENTARY NOTES | C | |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Participation Incentives Goal setting Action plan | Organizational behavior modification 81 2 25 047 | |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) It is argued that Neider's study claiming to show the beneficial effects of participation on store sales is open to other interpretations, as are many studies of participative decision making. Neider's study actually had four independent variables: participation; a sales plan; goal setting; and incentives. The first two constituted one condition; the second two another; and all four another. Thus no definitive | | |

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Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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Comment on Neider: The Issue of Interpretation of Experiments¹

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¹Preparation of this paper was facilitated by Contract No. N00014-79-C-0680 from the Office of Naval Research, Organizational Effectiveness Research Program.

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ABSTRACT

It is argued that Neider's study claiming to show the beneficial effects of participation on store sales is open to other interpretations, as are many studies of participative decision making. Neider's study actually had four independent variables: participation; a sales plan; goal setting; and incentives. The first two constituted one condition; the second two another; and all four another. Thus no definitive interpretation of the results is possible. However, an interpretation that is equally, if not more, plausible than Neider's is that goal setting and incentives do not improve performance unless there is an adequate action plan. Participation may be one method of developing and/or gaining commitment to such plans. The general issue of interpretation of experiments is discussed.

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Comment on Neider: The Issue of Interpretation of Experiments

Neider's (1980) recent article is symptomatic of a widespread problem in the social sciences: that of non-objective interpretations of research studies. This seems to occur most commonly when a pre-existing ideology, or philosophy of science, or set of assumptions clashes with the actual procedures used or results obtained by one or more studies. For example, concurrent correlations obtained between supervisory style and worker attitudes or performance were traditionally interpreted as indicating that the first caused the second, because a one-way causal model was assumed in which supervisors controlled their subordinates. Later experiments demonstrated that subordinate actions could affect supervisory style (e.g., see Hollander, 1978). Now it is recognized that supervisor-subordinate influence is reciprocal. Theorizing on parent-child influence has gone through a similar evolution.

Studies reported as demonstrations of organizational behavior modification have been shown to have almost nothing to do with behavior modification principles (Locke, 1977, 1980). The original interpretations simply reflected the authors' predilection for the philosophy of behaviorism.

Nowhere is the existence of bias more evident than in the studies of participation in decision-making. This was documented in Locke and Schweiger's (1979) major review article (which was not cited by Neider, 1980). They found that it was common in experiments on participation to manipulate anywhere from two to as many as nine

independent variables and yet to attribute the positive results obtained mainly or solely to the effects of participation. More recently, Bartlem and Locke (in press) have shown that even the classic Coch and French (1948) article was severely confounded and provides highly equivocal evidence for the benefits of participation. Similarly, I believe that Neider's (1980) experiment is open to interpretations other than the one she made. To demonstrate this, let me first summarize the study. Its purpose was to increase sales in retail stores. There were four experimental conditions, each confined to a different store.

Participation only (Store C): employees, after discussions among themselves, developed an alternative plan for dealing with customers as they entered the store. Instead of sticking with a customer the whole time, they suggested greeting the customer, offering their help if needed, and then allowing the customer to browse freely.

Incentive only (Store B): This condition actually involved both setting (minimum and midrange) goals or sales targets for each employee and rewarding each based on the degree of goal achievement. The incentive plan was designed with employee input and was arranged in a three-tiered hierarchy, although we are not told just what was offered at each level.

Combined condition (Store D): This group was labeled "the" experimental condition in the abstract and on p. 432, although all the conditions were called "experimental conditions" on p. 430. This condition was a combination of the previous two conditions.

Apparently the sales approach decided upon was the same as in the Participation only condition. While the actual sales targets were

apparently different from those of the incentive only groups, the two sets of goals were equated for subjective difficulty. We are not told whether the content of the incentive plans in Store B and D were the same or different.

Control Condition (Store A): This store had no treatment.

The results showed that the combined condition led to consistently higher sales and higher effort than the other conditions over a 4 week period. This basic result was replicated in a second study in which Store A was given the same treatment as Store D, while the original treatments in Stores B, C and D were terminated.

Neider's Interpretation

Neider interpreted the results in terms of a contingency model of participation; she argued that participation improves effort and performance only when: (a) it clarifies the effort-reward relationship; and (b) high performance is rewarded.

Neider (1980) found that participation in Stores C and D increased the employees' understanding of how to perform well, but she presented no evidence regarding perceptions of the effort-reward relationship nor regarding the effect of the incentives on the perceived valence of high performance.

Alternative Interpretation

Observe first that there are actually four rather than two independent variables in this study (not including combinations).

The Participation Condition included: (1) participating in the development of an action plan for approaching customers; and (2) the plan itself (e.g., its quality). The Incentive Condition included two additional variables: (3) setting minimum and mid-range goals or sales targets; and (4) the offering of incentives for attaining those goals. The combined condition included all four variables. This makes it impossible, of course, to definitively identify the key variable or combination of variables responsible for the results. If there were 2 levels of each variable, 16 conditions would be required to test all possible combinations--an impossible requirement for a controlled field study. Given the results obtained, however, an alternative interpretation is that: goals plus incentives for goal attainment only lead to improved performance when a clear and effective action plan is developed for reaching those goals. This interpretation is consistent with findings in the goal setting literature (Locke, Shaw, Saari and Latham. in press). While not specifying the role of participation, this interpretation seems at least as plausible as the one offered by Neider (1980) which ignored the possible role played by goals.

In certain respects the present interpretation may be more plausible than Neider's (1980). For example, Locke, Feren, McCaleb, Shaw and Denny (1980) found that field studies of money incentives and goal setting have led to median performance increases of 30% and 16% respectively, while field studies of participation have yielded a median increase of only 0.5%. This suggests that incentives and goals may be more potent variables than participation with respect to motivation.

There are also logical grounds for treating money and goals as more fundamental than participation. Without pay, workers would not show up for work at all (although they will certainly do some work on non-incentive pay). But without at least implicit goals (e.g., job descriptions or assignments) effort would not be directed toward anything. In contrast, many situations exist where work gets done without subordinate participation.

Locke and Schwieger (1979), however, have argued that participation may be quite useful from a cognitive viewpoint, i.e., as a means of obtaining ideas which will lead to better quality decisions. In the present study the probable benefit of participation was that it led to the development of a more effective plan for dealing with customers. (Neider offered no reasons as to why the employees' plan was superior to the store's own policy, but one can surmise that customers who are followed around until they buy something feel harassed and probably spend less time looking for merchandise than those who are allowed to browse at will). Thus a second part to the above interpretation of this study could be that: better quality action plans will be developed by employees working participatively than by management working unilaterally. This statement obviously requires qualification; its validity will depend on the relative knowledge and expertise of employees and management regarding the issue at stake (Locke and Schwieger, 1979).

An unanswered question from Neider's study is: What would have happened if the employee's plan had been imposed on clerks in another store (e.g., as a new store policy)? If the plan had worked

equally well (assuming goals and incentives were also present), this would indicate that the benefits of participation were mainly cognitive (i.e., the content of the ideas) rather than motivational (i.e., commitment to the ideas). If the plan did not work as well when imposed, this would suggest that participation was useful not just as a method of obtaining good ideas but also as a method of insuring acceptance of or commitment to the ideas. The literature is not totally consistent on this point. Reviews by Locke and Schweiger (1969) and Locke et al. (1980) found little evidence for participation as a motivator, but Lawler and Hackman's (1969) findings suggest that it can be a motivator (although other interpretations can be made of their findings as well).

Neider also failed to separate the effects of goal setting from those of incentives. Locke et al. (in press) concluded that both may have significant and independent effects on performance.

There are still other possible interpretations of Neider's study. For example, the difficulty of the goals in stores B and D (and store A in the second experiment) may not have been the same. Neider equated the goals in stores B and D for subjective goal difficulty (based on ratings) but not for objective goal difficulty (e.g., based on the absolute level of the sales goals in relation to expected sales based on last year's sales and time of year, etc.). The absolute goal difficulty level in store D may have been higher in that the original goal set for store A had to be lowered while that for store D did not. Locke, Shaw, Saari and Latham (in press) found that measures of objective goal difficulty and personal goals were more reliably related to actual performance than subjective goal difficulty.

Another possibility is that the different stores developed different incentive plans. Neider does not tell us what the actual rewards were in each store for reaching the minimum and the midrange goals. Nor are we told what rewards were actually earned, since degree of goal success was not reported. Since the valence of success was not measured, we do not even know whether the subjective value of the various incentives were equal across stores.

While the latter two interpretations might be ruled out by obtaining further data from the experimental records, the more complex issue of interpreting an experiment with multiple independent variables cannot be resolved conclusively without a more stringent experimental design (perhaps incorporating fewer total variables).

Conclusion

My goal in this paper was not to pick on Dr. Neider, an obviously competent young researcher. Conducting controlled field studies is a very difficult undertaking and she is to be commended for her work in this area. My purpose here was to call attention to the important issue of interpreting research findings and to show that the same rigor and logical scrupulousness must be used in the interpretation as in the design and analysis of studies.

As noted earlier Neider is not the only researcher who can be accused of a questionable interpretation of a study of participation. Many such studies are discussed in Locke and Schweiger (1979). Another was published more recently by Richter and Tjosvold (1980).

Their experiment purported to measure the effects of student participation on student attitudes and motivation. However, "Teachers in the student participation condition learned (during training) about realistic goal setting, active listening, leading a group without pre-determined goals, asking questions and encouraging others to respond, and constructive brainstorming" (p.76). While the positive effects of the treatment were attributed to the effects of participation alone, clearly no legitimate inferences about single variables can be made from this study due to the extensive confounding.

A useful antidote to the procedure of unjustified or arbitrary interpretations of studies would be for authors to go through the following procedures when interpreting a study:

- (a) What is the evidence in favor of the interpretation offered?
- (b) Have alternative interpretations been ruled out? How?

While the first criterion is often satisfied in social science research, the second is too often ignored. The result is that scientific progress is slowed, sidetracked or halted.

Journal editors might facilitate the process of objective interpretation by requiring a separate section in each manuscript titled "Interpretation" following the "Results" section or by requiring that interpretation, based on the above two criteria, be the first issue addressed in the "Discussion" section.

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